

What is claimed is:

- 5 1. A method for locating position comprising:
receiving satellite telemetry data from all of the
satellites in a global positioning system constellation of
satellites;
communicating the received satellite telemetry data to
10 a central processing site;
propagating selected satellite telemetry data to a
mobile receiver; and
acquiring at least one satellite signal at said mobile
receiver using said selected satellite data.
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2. The method of claim 1 wherein the selected satellite
telemetry data comprises the ephemeris data for each
satellite in view of the mobile receiver.
- 20 3. The method of claim 2 wherein the selected satellite
data comprises a pseudo-range model, derived from the
ephemeris data, that represents a relative position of each
satellite in view of the mobile receiver.
- 25 4. The method of claim 2 wherein the selected satellite
telemetry data comprises a Doppler measurement derived from
the satellite ephemeris data.
5. The method of claim 1 wherein said acquiring step
30 further comprises:
using the selected satellite telemetry data to narrow
a frequency uncertainty and a code uncertainty.
6. The method of claim 1 wherein said receiving step is
35 accomplished using four satellite signal receivers.

7. The method of claim 1 further comprising:

computing a position of said mobile receiver using
said selected satellite data.

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8. The method of claim 7 wherein said computing step is
performed within the mobile receiver.

9. The method of claim 7 wherein said computing step is
10 performed at a location that is remote from said mobile
receiver.

10. The method of claim 1 wherein said at least one
satellite signal is a signal having a high signal strength
15 and said acquiring step further comprises:

using the at least one acquired satellite signal to
aid in receiving other satellite signals having low signal
strength.

20 11. The method of claim 10 wherein said at least one
acquired satellite signal is used to generate a clock and a
correlator delay offset.

12. The method of claim 10 wherein said at least one
25 acquired satellite signal is used to improve an estimated
pseudo-range computation for satellite signals having low
signal strength.

13. A method for locating position comprising:
30 receiving satellite telemetry data from a plurality of
the satellites in a global positioning system constellation
of satellites;

communicating the received satellite telemetry data to
a central processing site;

35 deriving a pseudo-range model comprising a pseudo-
range, a pseudo-range rate and a pseudo-range acceleration;

propagating the pseudo-range model to a mobile
receiver; and

acquiring at least one satellite signal at said mobile receiver using said pseudo-range model.

14. The method of claim 13 wherein said acquiring step
5 further comprises computing Doppler from said pseudo-range model.

15. The method of claim 13 wherein said satellite
telemetry data comprises a satellite clock signal and
10 satellite position information.

16. The method of claim 13 wherein the pseudo-range model
is derived from satellite telemetry data comprising
ephemeris data for each satellite in view of the mobile
15 receiver.

17. The method of claim 16 wherein the satellite telemetry
data comprises a Doppler measurement derived from the
satellite ephemeris data.

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18. The method of claim 13 wherein said acquiring step
further comprises:

using the pseudo-range model to narrow a frequency
uncertainty and a code uncertainty.

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19. The method of claim 13 wherein said receiving step is
accomplished using four satellite signal receivers.

20. The method of claim 13 further comprising:

30 computing a position of said mobile receiver using
said pseudo-range model.

21. The method of claim 20 wherein said computing step is
performed within the mobile receiver.

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22. The method of claim 20 wherein said computing step is
performed at a location that is remote from said mobile
receiver.

23. The method of claim 13 wherein said at least on
satellite signal is a signal having a high signal strength
and said acquiring step further comprises:

5 using the at least one acquired satellite signal to
aid in receiving other satellite signals having low signal
strength.

24. The method of claim 13 wherein said at least one
10 acquired satellite signal is used to generate a clock and a
correlator delay offset.

25. The method of claim 13 wherein said at least one
acquired satellite signal is used to improve an estimated
15 pseudo-range computation for satellite signals having low
signal strength.

26. Apparatus for locating a position of a mobile receiver
comprising:

20 a plurality of satellite signal receivers for
receiving satellite signals from all satellites in a
constellation of global positioning satellites;

 a communications network, coupled to each of said
satellite signal receivers in said plurality of satellite
25 signal receivers;

 a satellite data processor, coupled to said
communications network; and

 a mobile receiver, coupled to said satellite data
processor.

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27. The apparatus of claim 26 wherein said communications
network comprises three or more satellite signal receivers.

28. The apparatus of claim 26 further comprising

35 a wireless network for communicating said satellite
data to said mobile receiver.

29. The apparatus of claim 26 wherein said satellite data processor generates a pseudo-range model for each mobile receiver and communicates the pseudo-range model to the mobile receiver.

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30. The apparatus of claim 26 wherein said plurality of satellite signal receivers are positioned to receive telemetry data from each and every satellite in a satellite constellation.

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31. The apparatus of claim 23 wherein said satellite constellation is a global positioning system (GPS) satellite constellation.

15 32. Apparatus for providing satellite data to a mobile receiver comprising:

a plurality of tracking stations for receiving telemetry data from satellites; and

20 a communication network for propagating the telemetry data from all the satellites to a data processor.

33. The apparatus of claim 32 wherein said data processor transmits said data to a mobile receiver.

25 34. The apparatus of claim 32 wherein said data processor produces a pseudo-range model using said telemetry data.

35. The apparatus of claim 32 wherein the plurality of tracking stations comprise at least three stations.

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36. A method of receiving global positioning system (GPS) satellite signals comprising:

receiving satellite ephemeris at a first location;

35 communicating the satellite ephemeris to a mobile GLS receiver at a second location; and

processing satellite signals received at the mobile GPS receiver using the ephemeris to reduce code and

frequency uncertainty in the mobile GPS receiver to improve acquisition sensitivity of the mobile GPS receiver.

37. The method of claim 36 wherein said communicating step
5 is performed through a wireless path.

38. The method of claim 36 further comprising generating a
pseudo-range model from said satellite ephemeris and
communicating the pseudo-range model to the mobile
10 receiver.

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